Cheek Defects

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KEYWORDS

- Cheek defects • Cheek reconstruction
- Mohs reconstruction • Cheek advancement flap
- Cervicofacial flap

ANATOMY OF THE CHEEK

The cheek is the largest aesthetic subunit of the face. The cheek is broad and has relatively simple contours compared with the surrounding, more complex regions, including the orbital, nasal, and lip aesthetic units. However, the predominant contour of the cheek is that of a smooth convex surface, which makes it difficult to hide incisions in this region compared with the hollows that have shadows in many other facial zones. Reconstruction of cheek defects may be straightforward and amenable to simple reconstruction techniques, such as primary closure.

However, the mass of the cheek requires that surgeons have great insight into the anatomic elements and healing characteristics of this area. Surgeons may need to integrate supplementary techniques into the reconstruction to preempt deformities, such as a flattened malar mound, a highlighted scar on a convex surface, or distracting asymmetries. One example of this includes the effect of cheek reconstruction on adjacent structures, including the lower eyelid, nasal ala, and lip. Surgeons must recognize the fixed base, free margin structures while planning reconstruction to avoid disproportionate tension and subsequent traction on these margins.

The boundaries of the cheek include the (1) infraorbital rim and zygomatic arch, superiorly, (2) the nasofacial junction, nasolabial fold, and labiomandibular crease, medially, (3) the border of the mandible, inferiorly, (4) and the preauricular crease, laterally (**Fig. 1**). Ideally, excisions and flap borders should be placed at these boundaries to help maximize scar camouflage.

Variations in the dermal, epidermal, and skin appendage characteristics gradually change throughout the aesthetic region, creating natural transitions into four main subdivisions. These subdivisions include the medial, zygomatic, buccal, and lateral units (**Fig. 2**).[1] Each of these subdivisions have unique characteristics that the surgeon must account for while planning the reconstruction. At the superior margin of the medial subunit at the junction with the eyelid, the skin texture becomes finer and often the pigmentation decreases. Dermal attachments of the orbicularis oculi muscle affect the surface contour during animation, resulting in static and dynamic rhytids.

Over the malar eminence, the malar fat pad adds volume and convexity to the contour and is interposed between the dermis and muscle, resulting in less change with animation. Thus, reconstruction in this portion of the cheek must restore volume, and incision lines become harder to camouflage in relaxed skin tension lines (RSTLs). Medially, the melolabial mound and adjacent melolabial crease create a sharply defined border between the cheek and lip. Unlike reconstruction near the eyelid, which has the goal of a muted transition, the mound and crease require definition that should be symmetric with the opposite side.

Laterally, the skin is more uniform in its characteristics, particularly for women. This area is also seen tangentially, and thus deformities are less distressing to the eye. The lateral subunit also has less subcutaneous fat and is moderately fixed to the superficial musculoaponeurotic system (SMAS) overlying the parotid gland.[2] This will affect the degree of mobilization achieved while transposing flaps. The zygomatic subunit is also fixed because

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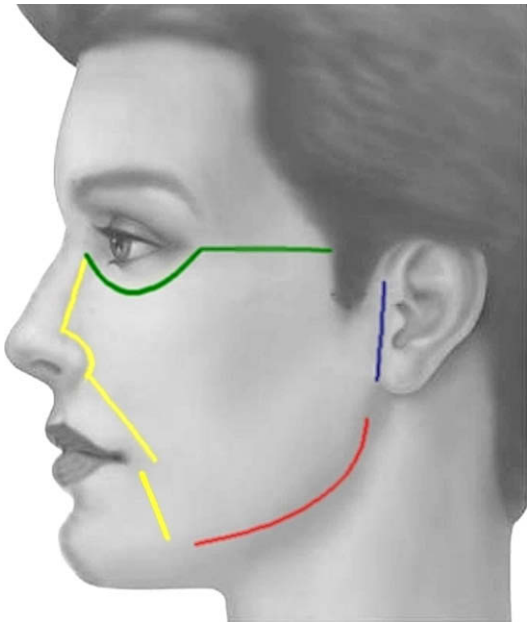

Fig. 1. The boundaries of the cheek's aesthetic region include the superior margin at the infraorbital rim and zygomatic arch (*green*). Medially, the borders are at the nasofacial junction, nasolabial fold, and labiomandibular crease (*yellow*). The inferior margin is the border of the mandible (*red*), and the preauricular crease (*blue*) is at the lateral border.

of the zygomatic-retaining ligament extending from the zygoma to the dermis overlying this region.

The zygomatic ligament is one of the retaining ligaments of the cheek that fix the overlying soft tissues to the facial skeleton.[3] These ligaments, which include the orbicularis, zygomatic, upper masseteric, and mandibular ligaments, separate larger areas of the cheek, where no deep attachments to the dermis of the overlying soft tissue are present. Within these spaces are a series of soft tissue glide planes that separate the overlying skin, subcutaneous layer, and SMAS from the deep fascia or periosteum. These glide planes become more apparent with aging and laxity as the soft tissues sag, while the dense retaining ligaments resist distension and appear as cutaneous grooves. Surgeons may use these cutaneous grooves for concealing incisions during reconstruction. While creating large reconstructive flaps, surgeons may need to divide these ligaments to achieve more flap mobility.

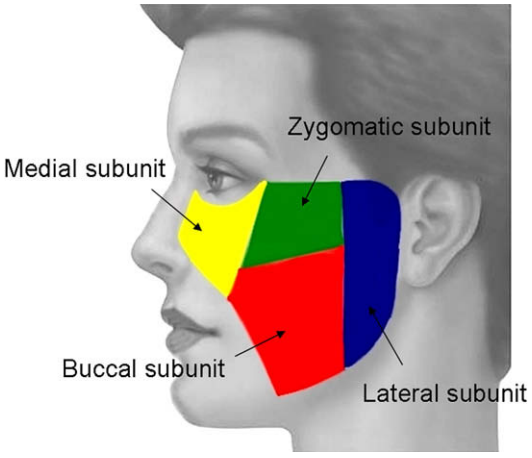

Fig. 2. The cheek aesthetic region is divided into four subunits based on the bony and soft tissue anatomy of the region. These subunits include the medial, zygomatic, buccal, and lateral units.

The vascular supply of the cheek includes the transverse facial artery, which arises from the superficial temporal artery. The facial artery crosses the mandible, traverses the face obliquely, and terminates in the angular artery. The infraorbital artery supplies the mid cheek and has anastomotic connections with the facial artery. Many of the flaps that are performed in the cheek are random flaps relying on the subdermal plexus for perfusion of the flap.

Motor innervation of the facial muscles of the cheek is provided by the facial nerve (CN VII). The facial nerve exits the stylomastoid foramen, branches within the parotid gland, and continues through the cheek deep to the SMAS as the branches travel to the facial muscles. Sensory innervation to the medial and zygomatic cheek is provided by the maxillary division of the trigeminal nerve through the infraorbital, zygomaticofacial, and zygomaticotemporal branches. The mandibular division of the trigeminal nerve provides sensation to the lateral and buccal portions of the cheek through the buccal and auriculotemporal branches. The mental nerve provides sensation to the inferomedial cheek.

TECHNIQUES FOR CHEEK RECONSTRUCTION

The choice of reconstruction technique will vary depending on tumor characteristics and the size, depth, and location of the defect within the cheek. The distensibility of the surrounding tissues should be considered, in addition to the age, general health, and aesthetic sensibilities of the patient. Reconstructive options based on location of the defect are discussed later, after the types of reconstruction used and some specific considerations for the cheek region.

Secondary Intention

Healing through secondary intention is the simplest form of reconstruction. Healing through